



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/996,037	11/16/2001	Dimitri Donskoy	7604/40/1	2120
20694	7590	03/15/2005	EXAMINER	
WOLFF & SAMSON, P.C. ONE BOLAND DRIVE WEST ORANGE, NJ 07052			GRAHAM, ANDREW R	
			ART UNIT	PAPER NUMBER
			2644	

DATE MAILED: 03/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/996,037	Applicant(s) DONSKOY ET AL.	
	Examiner Andrew Graham	Art Unit 2644	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 September 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 and 28-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 and 28-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 November 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Art Unit: 2644

DETAILED ACTION

Drawings

1. The drawings are objected to because they fail to meet several of the requirement of CFR § 1.84.

- § 1.84 (1) *Character of lines, numbers, and letters:*

Every line, number, and letter must be durable, clean, black (except for color drawings), sufficiently dense and dark, and uniformly thick and well-defined. The weight of all lines and letters must be heavy enough to permit adequate reproduction. The lines of Figures 1-3 fail to meet this requirement.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 3, 12, and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Lewiner et al (USPN 4250415), hereafter referred to as "Lewiner".

Art Unit: 2644

Lewiner discloses an electret microphone that utilizes a flexible intermediate layer in place of an air gap between electrets.

Specifically regarding Claim 1, Lewiner teaches:

An acoustic and vibration sensor (col. 3, lines 33-42) comprising:

a first electrically charged layer (4_1) having a contact side (closer to 11) and an intermediate side (closer to (71)) (Figure 4; col. 3, lines 25-27; col. 6, lines 49-57);

a second electrically charged layer (4_2) having a contact side (closer to 12) and an intermediate side (closer to) (Figure 4);

an acoustically compliant (col. 4, lines 7-10 and 25-34) intermediate electrically insulating (col. 4, lines 11-13) layer (continuous thickness comprising $7_1, 2, 7_2$) disposed between and contacting the intermediate sides of the first and second electrically charged layers ($4_1, 4_2$) (col. 4, lines 16-34);

a first contact layer (1_1) disposed on the contact side of the first electrically charged layer (1_1) (Figure 4); and

a second contact layer (1_2) having at least one sensing element (electrode, variation in voltage at terminal; col. 3, line 33-41; col. 6, lines 55-56) disposed on the contact side of the second electrically charged layer (Figure 4),

wherein the at least one sensing element and layers of the device move with respect to each other in response to acoustic or vibrational waves intercepted by the sensor (col. 3, lines 33-35; col. 4, lines

Art Unit: 2644

32-34), said movement creating an output voltage corresponding to said acoustic or vibrational waves (col. 3, lines 36-41).

Regarding Claim 3, Lewiner teaches:

the first contact layer (1₁) comprises at least one sensing element (electrode; col. 6, lines 55-56).

Regarding Claim 12, Lewiner teaches:

the intermediate layer comprises a composite material ("compound", col. 5, lines 13-33).

Regarding Claim 14, Lewiner teaches:

at least one of the layers of the sensor is electrically polarized (col. 3, lines 25-32).

3. Claims 28 and 30 are rejected under 35 U.S.C. 102(b) as being anticipated by Fujii (JP 07-162982).

Regarding Claim 28, Fujii teaches:

providing a sensor (comprising 1,2) having transparent layers and at least one transparent sensing element (such as 2, "transparent electrode") (para. 0013);

positioning the sensor on the transparent surface (such as "glass window") so that light emitted from the transparent surface is transmitted through the sensor (para. 0013);

intercepting sound waves directed toward the transparent surface with the sensor (inherent for microphone, such as in "inputted the noise", para 0015);

Art Unit: 2644

allowing the sound waves to interact with the transparent layers and the at least one transparent sensing element (inherent in "inputting the noise"; para. 0014, para. 0015); and

generating a voltage in response to interaction of the sound waves with the transparent layers and the at least one transparent sensing element, said voltage corresponding to the sound waves (inherent, definition of bimorph or condensor microphones utilizing electrodes and piezoelectric ceramic or electret-zed backplate and electrodes; para. 0013-0015; also, able to output acoustic signal "with amplifier" of opposite phase of input acoustic signal; para. 0015).

Regarding Claim 30, Fujii teaches:

the step of positioning the sensor on the transparent surface comprises positioning the sensor on a video monitor so that light from the video monitor is transmitted through the sensor ("installed in the front face of the so-called graphic display device of a karaoke system" or "playback display of the other party"; para. 0013,0015).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the

Art Unit: 2644

art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 2 and 4-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lewiner as applied above, and in further view of Fujii et al (JP-PUB 07-162982).

As detailed above, Lewiner discloses an electret microphone that utilizes a flexible intermediate layer in place of an air gap between electrets and electrodes.

Lewiner does not specify:

- that the layers comprising such a microphone are optically transparent so as to provide an optically transparent sensor

Fujii teaches the construction and general areas of application for a transparent capacitor microphone

Specifically regarding Claim 3, Fujii teaches:

the layers (such as electrodes 11,12, and electret-ized backplate (10), in view of layers of Lewiner) comprising the sensor are optically transparent to provide an optically transparent sensor (placed in front of lens of image pickup unit; paragraphs (0014,0015))

To one of ordinary skill in the art at the time the invention was made, it would have been obvious to make the components that form the microphone of Lewiner transparent, as is taught for the capacitor type microphone of Fujii. Such a modification would have been desirable because it would have enabled the microphone to be used with

Art Unit: 2644

a display or image pickup unit with causing a user to loose a sense of congruence between the image being recorded or reproduced and the audio reception.

Regarding Claim 4, the examples of Fujii include the attachment of electrodes (2,12) to glass vibrating boards (3,13) (0013,0014,Abstract,Drawings A-B). These boards (3,13) and the connections to one of the two electrodes (2,12) of each microphone, in view of the above cited outer electrodes of Lewiner, read on "a backing layer disposed on the first contact layer".

Regarding Claim 5, Fujii teaches the connection of such transparent microphones to the graphic display device of a karaoke machine (0013). In view of the basic functions of a karaoke machine, the displaying of words in relative synchronization with music, this "graphic display device" reads on "a backing layer disposed on the first contact layer wherein the backing layer comprises a computer video screen".

Regarding Claim 6, Fujii teaches the connection of a transparent microphone to a glass window (0013), which reads on "a backing layer disposed on the first contact layer wherein the backing layer comprises a window".

Regarding Claim 7, Fujii teaches the connection of a transparent microphone to partition glass (0015), which reads on "the backing layer comprises a wall".

Art Unit: 2644

Regarding Claim 8, Fujii teaches the connection of a transparent microphone to the outside of a windowpane of a building (0015), which reads on "the backing layer comprises a surface of a structure".

5. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lewiner as applied above, and in further view of Elko et al (USPN 5388163), hereafter referred to as "Elko".

As detailed above, Lewiner discloses an electret microphone that utilizes a flexible intermediate layer in place of an air gap between electrets and electrodes.

One implementation of the system of Lewiner, a keyboard, involves the use of individual sensors through the use of independent electrodes (12 in electrode 1; Figure 5), but the process disclosed for forming these areas (12) is noted as metallization (col. 7, lines 15-27).

Lewiner does not specify:

- one or both of the contact layers can be patterned by a subtractive process to form sensing elements.

Elko teaches a fabrication technique for an electret transducer that utilizes individual areas on the surface of an electret layer to define active transducers on the array.

Specifically regarding Claim 9, Elko teaches:

one or both of the contact layers (conducting layer 21 in view of electrode of Lewiner discussed above) can be patterned (forming

Art Unit: 2644

areas 22) by a subtractive process (etching or dissolving) to form sensing elements (transducers in array) (col. 2, lines 33-56).

To one of ordinary skill in the art at the time the invention was made, it would have been obvious to pattern at least one of the electrode layers of Lewiner with an etching or dissolving procedure disclosed by Elko. The motivation behind such a modification would have been that performing such a process would have enabled multiple transducers to be formed on the surface of the sensor of any desired shape, size, and location.

Regarding Claim 10, Elko also teaches that such areas (22) may be formed by metal deposition techniques, such as evaporation, which reads on "patterned by an additive process" (col. 2, lines 57-66).

6. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lewiner as applied above, and in further view of Driver (USPN 5392358).

As detailed above, Lewiner discloses an electret microphone that utilizes a flexible intermediate layer in place of an air gap between electrets and electrodes.

Regarding this layer Lewiner teaches the use of silicone based products, including non-solid products such as foam 5 (col. 5, lines 13-27).

While silicone-based products are known in the art to include gels, Lewiner does not clearly specify:

- that this intermediate layer comprises a gel

Art Unit: 2644

Driver teaches an electrostatic transducer that utilizes a pair of dielectric elements (28,34) and electrodes (48,46). The operation of the transducer involves the oscillation of two films (18,22) disposed adjacent dielectric spacers (28,34), wherein the oscillation between the film layers (18,22) is damped by a thin flexible barrier (20) (col. 6, lines 6-23). This barrier may be a rubber sheet, but preferably consists of a petroleum gel (col. 6, lines 19-23). This gel reads on "the intermediate layer comprises a gel".

To one of ordinary skill in the art at the time the invention was made, it would have been obvious to utilize a gel, such as disclosed by Driver, in place of the solid elastomer disclosed for the intermediate layer of Lewiner. The motivation behind such a modification would have been that such a gel would have enabled damping, as disclosed as desirable by Lewiner, while also adhering and providing structural support for the adjacent parts of the vibrating structure.

6. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lewiner as applied above, and in further view of Metzger (USPN 4079162).

As detailed above, Lewiner discloses an electret microphone that utilizes a flexible intermediate layer in place of an air gap between electrets and electrodes.

Lewiner teaches that the intermediate layer may be a silicone based compound (col. 5, lines 13-15).

Art Unit: 2644

Lewiner does not specify:

- that the layer comprises a plurality of hollow polymer microspheres

Metzger teaches a flexible material that may be used to alter the frequency response of an impinging soundwave, wherein the material comprises a resin, such as an RTV silicone, and hollow microspheres. Specifically in regards to Claim 13, Metzger teaches:

the composite material (10,12) further comprises a plurality of hollow polymer microspheres (12) (col. 2, lines 49-68; col. 4, lines 1-61)

To one of ordinary skill in the art at the time the invention was made, it would have been obvious to utilize the resin and microsphere structure of Metzger as the silicone based filler compound of the microphone of Lewiner. The motivation behind such a modification would have been that such a structure would have retained elasticity, while providing selectable frequency transmission characteristic and minimal thickness.

7. Claims 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lewiner as applied above, and in further view of Kubli et al (USPN 5862239), hereafter referred to as "Kubli".

As detailed above, Lewiner discloses an electret microphone that utilizes a flexible intermediate layer in place of an air gap between electrets and electrodes.

Art Unit: 2644

Lewiner teaches one use of such as system that involves a plurality of electrodes (col. 7, lines 1-4 and 18-23), noting though that such a sensor may be used for recording sounds (col. 8, lines 12-14).

Regarding Claim 15, Lewiner does not specify:

- a plurality of sensing elements on the second contact layer forming a directional microphone array

Kubli teaches a directional sound recording sensor, wherein a plurality of distinct backplates are utilized for obtaining individual inputs.

Specifically regarding Claim 15, Kubli teaches:

a plurality of sensing elements (309-k) on the second contact layer ("backplate" layer of Kubli, in view of at least one of electrode layers of Lewiner discussed above) forming a directional microphone array (col. 3, lines 9-21; col. 5, lines 31-37)

To one of ordinary skill in the art at the time the invention was made, it would have been obvious to etch multiple, distinct electrodes in at least one of the electrode layers of Lewiner as is disclosed by Kubli. Such etching and formed electrodes would have been desirable because it would have enabled a plurality of sound sensors to be formed in the sensor of Lewiner, and such an array may be utilized as a directional sound input device, as is disclosed by Kubli.

Regarding Claim 16, Kubli teaches:

directional characteristics of the sensor (30 cm system) are adjustable by circuitry (additional PC boards) connected ("jumping")

Art Unit: 2644

to the plurality of sensing elements (original 30 cm system/board) (length and radius affect directional response, adding more board(s) affects length and therefore directional response; col. 5, lines 17-67; col. 6, lines 1-10).

Regarding Claim 17, Kubli teaches:

wherein the length of the sensor exceeds the wavelength of the sound or vibration sensed such that the sensor comprises a large aperture sensor (30 cm example is 1 Khz, frequencies of 300 Hz obtained; Figure 6; col. 6, lines 29-33).

8. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujii as applied above to Claim 28, and in further view of Elko et al (USPN 4802227).

As detailed above, Fujii teaches the use of transparent microphones with transparent display, window, or image providing surfaces.

Fujii does not specify:

the sensor includes a plurality of sensing elements and the method further comprises modifying directive characteristics of the sensor using control circuitry attached to a plurality of sensing elements located in the sensor.

Elko teaches an electret microphone array in use with direction adjustable circuitry.

Specifically regarding Claim 29, Elko teaches:

Art Unit: 2644

the sensor includes a plurality of sensing elements (101-1 through 101-9) and the method further comprises modifying directive characteristics of the sensor using control circuitry attached to a plurality of sensing elements located in the sensor (circuitry of Figure 1; col. 4, lines 18-49).

To one of ordinary skill in the art at the time the invention was made, it would have been obvious to implement a plurality of microphones for the electret-ized microphone example of Fujii as is taught by Elko, along with the directional circuitry disclosed by Elko in connection with each of said electret microphones. The motivation behind such a modification would have been that such an array would have enabled sound from a predetermined location, such as a user in front of a display, to be obtained, while minimizing sound not originating from this location, as is disclosed by Elko.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the

Art Unit: 2644

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Graham whose telephone number is 703-308-6729. The examiner can normally be reached on Monday-Friday, 8:30 AM to 5:00 PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huyen Le can be reached on (703)305-4844. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Application/Control Number: 09/996,037

Page 16

Art Unit: 2644

Andrew Graham

Examiner

A.U. 2644

✱

ag

January 24, 2005



XU MEI
PRIMARY EXAMINER